

REMARKS

Claims 1-15 and 21-25 are in the application, of which Claims 1 and 22 are independent claims. Claims 1, 2, 3, 4, 7, 9, 11, and 12 have been amended. Claims 16-20 have been canceled without prejudice. New Claims 21-25 have been added. Reconsideration and further examination are respectfully requested.

No new matter has been introduced by this amendment. The subject matter added to Claim 1 is fully supported by the disclosure, including, for example, paragraphs 11, 22, 24, 29, and 30 of the specification. As for Claims 2, 4, 9, 11, and 12, typographical errors have been corrected. As for Claim 3, a term "north" has been deleted to broaden the scope of the claim. Claim 7 includes the subject matter found in original Claims 4 and 6 and has been amended to broaden the scope of the claim. The subject matter covered by new Claims 21-25 is fully supported by the disclosure, including, for example, original Claims 1, 6 and 7 and paragraphs 6, 8, 11, 13, 22, 24, 29, 30, and 32 of the specification.

Paragraphs 28, 31, and 32 of the specification have been amended to correct typographical errors.

In the Office Action, Claims 1 and 12 were rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 3,489,203 ("Fischell"). Claims 2, 3, 9, 10, and 13 were rejected under 35 U.S.C. § 103(a) over Fischell in view of the allegedly admitted prior art on page 8 (paragraph 26). Claims 4-8 and 14 were rejected under 35 U.S.C. § 103(a) over Fischell as modified by the allegedly admitted prior art as applied to claims 1-3 above, and further in view of U.S. Patent No. 6,164,077 ("Feger"). Claim 11 was rejected under 35 U.S.C. § 103(a) over Fischell in view of U.S. Patent No. 6,073,888 ("Gelon"). Claim 15 was rejected under 35 U.S.C. § 103(a) over Fischell in view of U.S. Patent No. 5,823,476 ("Caplin").

Reconsideration and withdrawal of the § 102(b) and § 103(a) rejections are respectfully requested.

Without surrendering any equivalents, the present invention generally concerns a thermal controller for a system that includes an instrument tending to generate heat and a thermal radiator that is spatially separated and mechanically isolated from the instrument. The thermal controller includes an active cooler that can be placed at a location spatially separated and mechanically isolated from the instrument. The active cooler can transfer heat generated by the instrument to the thermal radiator without substantially transferring mechanical vibrations to the instrument.

The applied references are not seen to disclose, teach or suggest the features of the present invention. Specifically, neither Fischell, Feger, Gelon, Caplin nor the allegedly admitted prior art is seen to disclose, teach or suggest at least the features of a thermal radiator spatially separated and mechanically isolated from an instrument and an active cooler for being mounted at a location spatially separated and mechanically isolated from the instrument, where the active cooler is for transferring heat from the instrument to the thermal radiator without substantially transferring mechanical vibrations to the instrument.

Referring specifically to claim language, independent Claim 1 describes a thermal control system for a spacecraft characterized in part by one or more spacecraft thermal radiator panels spatially separated and mechanically isolated from an instrument, and the thermal control system includes at least one active cooler for being mounted to the spacecraft at a location spatially separated and mechanically isolated from the instrument, where the active cooler is for transferring heat from the instrument to the one or more spacecraft thermal radiator panels without substantially transferring mechanical vibrations to the instrument.

Independent Claim 22 describes at least one thermal radiator mounted at a location spatially separated and mechanically isolated from an instrument and at least one active cooler mounted at a location spatially separated and mechanically isolated from the instrument. The active cooler is for transferring heat from the instrument to the thermal radiator without substantially transferring mechanical vibrations to the instrument.

Turning to the applied references, Fischell—which appears to be the main reference relied upon in the Office Action—is directed to a controlled heat pipe. Fischell discloses a satellite having heat producing electronic equipment, a heat pipe, and a radiator element. The electronic equipment is placed within the walls of the satellite. At least a portion of the heat pipe is mounted within the walls of the satellite and is seen to be attached to the walls of the satellite. The radiator element is attached to the heat pipe. See Fischell, col. 2, lines 16-33 and Figure 1. Thus, neither Fischell's radiator element nor the heat pipe is seen to be mechanically isolated from the electronic equipment. In Fischell, if the heat pipe generates any mechanical vibration, such vibration is seen to be transferred to the electronic equipment. Accordingly, Fischell is not seen to disclose, teach or suggest a thermal radiator spatially separated and mechanically isolated from an instrument and an active cooler for being mounted at a location spatially separated and mechanically isolated from the instrument, where the active cooler is for transferring heat from the instrument to the thermal radiator without substantially transferring mechanical vibrations to the instrument.

As for the other applied references, the Office Action states:

- “Feger discloses that thermal links made up of braided copper are well known in the art.”
- “Gelon et al teaches that a closed loop control system is well known.”
- “Caplin teaches that solar panels are well known.”

Even if the references disclose the features as described in the Office Action, which Applicants do not concede, none of the applied references teaches or suggests the claimed combination. It is respectfully submitted that the Office Action appears to provide broad and general statements for rejections but does not provide specific teachings or suggestions from the prior art to make the particular claimed combination. Should the claim rejections are to be maintained, Applicants respectfully request that the next Office Action identify the specific teachings or suggestions that would have motivated one skilled in the art at the time of the invention to have made the particular claimed combinations.

Even if there was a sufficient teaching or suggestion to combine the applied references, which Applicants do not concede, Applicants respectfully submit that the resultant combination is not seen to have resulted in the particular claimed combination of having a thermal radiator spatially separated and mechanically isolated from an instrument and an active cooler for being mounted at a location spatially separated and mechanically isolated from the instrument, where the active cooler is for transferring heat from the instrument to the thermal radiator without substantially transferring mechanical vibrations to the instrument.

Accordingly, the applied references, either alone or in combination, are not seen to disclose, teach or suggest the features of independent Claims 1 and 22, which are believed to be in condition for allowance.

Dependent Claims 2-21 and 23-25 currently under consideration in the application are dependent from independent Claim 1 or 22 discussed above and therefore are believed to be allowable over the applied references for at least the same reasons. Because each dependent claim is deemed to define an additional aspect of the invention, the individual consideration of each on its own merits is respectfully requested.

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In view of the foregoing amendments and remarks, the entire application is believed to be in condition for allowance and such action is respectfully requested at the Examiner's earliest convenience.

Applicants' undersigned attorney may be contacted at the address and telephone number set forth below.

Respectfully submitted,

MCDERMOTT WILL & EMERY LLP



Soyeon (Karen) Laub
Registration No. 39,266

18191 Von Karman Ave., Suite 400
Irvine, CA 92612-7107
Phone: 949.851.0633
Facsimile: 949.851.9348
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